# **GROUP 4**

**1) What is the primary purpose of the Fast Fourier Transform? (Uğur Özkan)**

A) To calculate the convolution of two signals

B) To determine the frequency spectrum of a signal

C) To smooth a noisy signal

D) To perform amplitude scaling

E) To increase the length of the signal

**Answer: B**

**2) What is the purpose of using FFT when processing frames from a Dynamic Vision Sensor (DVS)? (Eren Yılmaz)**A) To analyze frequency-domain characteristics of event-based data, such as detecting periodic patterns or motion-related frequencies in the captured events and noise filtering.

B) To directly enhance the resolution of RGB frames captured by the DVS.

C) To convert event-based data into real-time videos with audio signals.

D) To filter out all event data and retain only RGB images.

**Answer: A**

**3) A proximity sensor outputs noisy real-time data. What is the best method to reduce noise and keep the main signal intact? (Semih Mert)**

A. Apply Fast Fourier Transform (FFT).

B. Use a low-pass filter.

C. Increase the sensor's sampling rate.

D. Use a high-pass filter.

E. Ignore the noise and process the raw data.

**Answer: B**

**4)What is the primary purpose of applying the Fast Fourier Transform (FFT) in radar signal processing? (Sude Nur Kibaroğlu)**

A) To increase the signal's amplitude

B) To filter out irrelevant frequencies

C) To transform the signal from the time domain to the frequency domain

D) To calculate the signal's phase shift directly

E) To compress the radar data for storage efficiency

**Answer: C**

**5)How does the Fast Fourier Transform (FFT) enhance radar data analysis? (Sude Nur Kibaroğlu)**

A) By compressing large datasets into a simpler format

B) By converting a signal into its frequency components for better interpretation

C) By directly measuring the distance to an object using signal phase

D) By removing background noise from the radar signal

E) By scnchronizing radar signals with other sensor data

**Answer: B**

**6)** **What is the primary purpose of applying a moving average filter to Inertial Measurement Unit data? (Aziz Önder)**

A) To increase the range of the Inertial Measurement Unit sensor readings.

B) To smooth out noise and make trends in the data more observable.

C) To convert linear acceleration into angular velocity.

D) To amplify high-frequency components in the Inertial Measurement Unit signals.

E) To reduce the sampling rate of the Inertial Measurement Unit data.

**Answer: B**